

## Point Coupled Displacement Sensor, Phase I

Completed Technology Project (2005 - 2005)



## Project Introduction

Real-time displacement measurement techniques are needed to acquire aerodynamic and structural system characteristics in flight. This proposal describes the development of a new type of position sensor which we have termed a Point Coupled Sensor (PCS). This sensor is able to detect the position of a target, typically a small piece of metal or magnetic material, in one or two dimensions. The one dimensional (1-D) or linear embodiment of the sensor is similar in function to the well-known linear variable differential transformer (LVDT). In this configuration, it is anticipated that the PCS will provide similar measurement accuracies, but with significant cost, size and weight reduction. This makes the PCS especially attractive for use in unmanned aerial vehicles (UAV's) and other applications where size and weight are important. The PCS approach can also be implemented as a two-dimensional (2-D) sensor, which may facilitate the measurement of complex surfaces, and holds promise for many new and evolving UAV and aircraft applications such as aeroelastic wings and measuring the position of swept surfaces or moving panels. The PCS two-dimensional concept also offers the potential to introduce novel surface sensor measurement functionality and could conceivably be fabricated within the composite aircraft structure.

## Primary U.S. Work Locations and Key Partners



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## Organizational Responsibility

**Responsible Mission Directorate:**

Space Technology Mission Directorate (STMD)

**Lead Center / Facility:**

Armstrong Flight Research Center (AFRC)

**Responsible Program:**

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Armstrong Flight Research Center(AFRC)	Lead Organization	NASA Center	Edwards, California
Engineering Acoustics	Supporting Organization	Industry	Winter Park, Florida

Primary U.S. Work Locations	
California	Florida

## Project Management

**Program Director:**

Jason L Kessler

**Program Manager:**

Carlos Torrez

**Principal Investigator:**

Bruce Mortimer

## Technology Areas

**Primary:**

- TX13 Ground, Test, and Surface Systems
  - └ TX13.1 Infrastructure Optimization
    - └ TX13.1.6 Test, Operations, and Systems Safety